

CLAIMS

1. A process for the production of cross-linked beadlets containing one or more active ingredients selected from the group of a fat-soluble vitamin active material, a carotenoid and a polyunsaturated fatty acid,
5 the process comprising treating a dry particulate form at a temperature in the range of from 90°C to 140°C for a time period of from 30 seconds to 30 minutes or from 1 minute to 10 minutes or from 3 minutes to 7 minutes.
2. The process according to claim 1 wherein the fat-soluble vitamin active material is
10 selected from vitamin A, vitamin D and vitamin E, the carotenoid is selected from β -carotene, lycopene, zeaxanthin, astaxanthin, lutein, capsanthin and cryptoxanthin and the polyunsaturated fatty acid is selected from arachidonic acid, eicosapentaenoic acid, docosahexaenoic acid and γ -linolenic acid and triglycerides and ethylesters thereof.
3. The process according to claim 2 wherein the concentration of the fat-soluble vitamin
15 active material, the carotenoid and the polyunsaturated fatty acid is selected from a total concentration in the range of from 500,000 IU vitamin A/g beadlet to 1,500,000 IU vitamin A/g beadlet, in the range of from 100,000 IU vitamin D/g beadlet to 500,000 IU vitamin D/g beadlet, in the range of from 50 % to 75 % vitamin E, in the range of from 5 % to 20 % of carotenoid and in the range of from 20 % to 50 % polyunsaturated fatty acid
20 as triglyceride.
4. The process according to claim 1 wherein the dry particulate forms have a moisture content of less than 10 %.
5. The process according to claim 1 wherein the heat treatment is achieved in a batch or in a continuous process where the beadlet residence time and temperature are controlled.
- 25 6. The process according to claim 1 wherein the beadlet is added in a hot air or nitrogen stream having a temperature between 100 and 200°C.
7. The process according to claim 1 wherein after addition of the dry particulate form the temperature is raised in a time in the range of from a few seconds to 1 minute above 100°C.
- 30 8. The process according to claim 1 wherein heating takes place at a maximum beadlet temperature in the range of from 110°C to 140°C.

9. A cross-linked beadlet form having a core and a surface region, wherein the core region contains, in a high concentration, one or more active ingredients selected from the group of a fat-soluble vitamin active material, a carotenoid and a polyunsaturated fatty acid, and the surface region contains less than 10 % or less than 5 % of the total active ingredient content.
10. A cross-linked beadlet form containing one or more active ingredients selected from the group of Vitamin A in a total concentration in the range of from 800,000 IU vitamin A/g beadlet to 1,500,000 IU vitamin A/g beadlet, in a total concentration in the range of from 100,000 IU vitamin D/g beadlet to 500,000 IU vitamin D/g beadlet, vitamin E in a total concentration in the range of from 50 % to 75 %, a carotenoid in a total concentration in the range of from 5 to 20% and a polyunsaturated fatty acid in a total concentration in the range of from 5 to 50%, wherein the surface region contains less than 10 % or less than 5 % of the total active ingredient content.
11. The cross-linked beadlet form according to claim 10 having the following components:
- 30 % to 45 % of vitamin A, 0 % to 2 % of vitamin D₃, 5 % to 15 % of 6-ethoxy-1,2-dihydro-2,2,4-trimethylquinoline, 25 % to 35 % of gelatine, 5 % to 10 % of fructose, 2 % to 10 % of glycerine, 5 % to 10 % of calcium silicate, 0 % to 25 % of corn starch, 0 % to 1 % of edible fat, and water.